

REMARKS / ARGUMENTS

Examiner Do is thanked for the thorough examination of the subject Patent Application. The claims have been carefully reviewed and amended, and are considered to be in condition for allowance.

It is the objective of this invention to provide a multichannel digital filter bank circuit and a method implemented by cascading sub-filters of the recursive type suitable for graphically equalizing electrical signals received via a communication path. It is also an objective of this invention to produced equalized signals having minimal distortion of signal spectral characteristics including magnitude and phase. The circuit of this invention is implemented with cascaded connections of first order or second order digital filters. It is an additional objective of this invention to provide for the programming of the individual transfer functions of the above digital filters so as to produce unity gain. This unity gain case results in an output signal which is an exact replica of the input signal with no delay. This result indicates the minimal distortion introduced by the method of this invention.

Reconsideration of the rejection of claims 1 and 4, under 35 U.S.C. 103(a) as being obvious by Tan et al. (US Patent 6,233,594) in view of King et al. (US Patent 7,123,728) is requested based on the following.

Tan et al, which is not a graphics equalizer, uses fixed low pass filter sections which block high frequencies. The instant application, which is a graphics equalizer, uses bandpass filter sections with programmable parameters which allow users to shape the frequency spectrum as required. Graphics equalizers have fixed center frequencies. The instant application shapes the frequency spectrum of a signal about its native center frequency in a way specified by the user. The user does this by specifying the a , b , g_i , and r_i parameters in figure 4 of the instant application. Also, Tan et al. involves filters with multiple sampling frequencies. In Tan, the second sampling frequency is less than the first sampling frequency. Similarly, the third sampling frequency is less than the second sampling frequency. Claim 1 of Tan clearly states the requirement for two frequencies. Filters such as Tan which have reduced sampling frequency between consecutive sections are known as decimation filters. The instant application is simpler than Tan et al. since it uses only one frequency, as is shown in claim 1 below where it is stated that the instant application does not require multiple sampling frequencies.

1. A graphics equalizer utilizing multichannel digital filter bank comprising:

a plurality of first order or second order digital filters, connected in a cascade fashion, whereby said electrical signals are enhanced, attenuated or kept the same, after passing through said cascading sub-filters, wherein said first order or second order digital filters are of the recursive type suitable for graphically equalizing electrical signals received via a communication path, wherein said first or second order digital filters do not require multiple sampling frequencies, and wherein said first and second order digital filters have programmable parameters which allow users to shape said graphics equalizer's frequency spectra as desired.

In addition, as stated by the examiner in the 11/30/2006 office action, Tan et al. fail to disclose in Figure 4 the graphics equalizer utilizing the filter and the first and second order

filters which have programmable parameters which allow users to shape the graphics equalizer's frequency spectra as desired. King et al. claim a computer readable medium, containing program instructions for controlling a parametric equalizer. Parametric equalizers are very different from the graphics equalizer of the instant application. Graphics equalizers allow the setting of boost and cut, which are terms for the shape of a frequency spectra about a fixed center frequency. However, parametric equalizers which are more complex than graphics equalizers, not only allow the setting of boost and cut, but also allow changes to the center frequency and bandwidth. King et al. utilizes the superposition of multiple frequency curves to create a composite frequency curve with different center frequency and bandwidth. This is very different from the instant application which discloses a simple, efficient graphics equalizer which allows users to vary the shape of a frequency spectrum as desired, whereby said spectrum about a given center frequency pass electrical signals which are enhanced, attenuated or kept the same.

In summary, coupling Tan which is a decimation filter with King which is a parametric equalizer does not produce an obvious lead to the graphics equalizer of the instant application. Consequently, independent claims 1 and 4 should be allowed.

Reconsideration of the rejection of claims 2 and 5, under 35 U.S.C. 103(a) as being obvious by Dyer (US Patent 4,947,360) in view of King et al. (US Patent 7,123,728) is requested based on the following.

Dependent claims 2 and 5 depend on independent claims 1 and 4, which are believed patentable for the reasons stated above. Therefore, dependent claims 2 and 5 are also believed to be patentable and should now be allowed.

Reconsideration of the rejection of claims 3 and 6, under 35 U.S.C. 103(a) as being obvious by Cox et al. (US Patent 5,353,346) in view of King et al. (US Patent 7,123,728) is requested based on the following.

Dependent claims 3 and 6 depend on independent claims 1 and 4, which are believed patentable for the reasons stated above. Therefore, dependent claims 3 and 6 are also believed to be patentable and should now be allowed.

We have reviewed the related art references made of record and agree with the Examiner that none of these suggest the present claimed invention.

The examiner is thanked for the thorough review of this patent application. The changes to the specification do not introduce any new matter.

It is requested that should there be any problems with this Amendment, please call the undersigned Attorney at (845) 452-5863.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'SBA', with a long horizontal line extending to the right.

Stephen B. Ackerman, Reg. No. 37,761